



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/752,384	01/05/2004	Frank David McSherry	224684	6813
41505	7590	01/25/2007	EXAMINER	
WOODCOCK WASHBURN LLP (MICROSOFT CORPORATION)			PHAM, KHANH B	
CIRA CENTRE, 12TH FLOOR				
2929 ARCH STREET			ART UNIT	PAPER NUMBER
PHILADELPHIA, PA 19104-2891			2166	
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		01/25/2007	PAPER	

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>
	10/752,384	MCSHERRY, FRANK DAVID
	<b>Examiner</b>	<b>Art Unit</b>
	Khanh B. Pham	2166

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 23 October 2006.
- 2a) This action is **FINAL**.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-19 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All    b) Some \* c) None of:
1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 101***

1. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

**Claims 1-19** are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

**Claims 1-3, 13-15** recite "a system". However, the claims lack the necessary physical articles or objects to constitute a machine or a manufacture within the meaning of 35 USC 101. They are clearly not a series of steps or acts to be a process nor are they a combination of chemical compounds to be a composition of matter. As such, they fail to fall within a statutory category. They are, at best, functional descriptive material *per se*.

**Claims 4-12, 16-19** are not statutory because they merely recite a number of computing steps without producing any useful, concrete and tangible result which result in a practical application.

### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent

granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1, 4, 13-16 are rejected under 35 U.S.C. 102(e) as being anticipated by Kamvar et al. (US 2005/0033742 A1), hereinafter "Kamvar".

Claim 1.

Kamvar discloses:

A system for searching web pages comprising:

a database for storing connectivity information about the web pages [link database, Para 0007]; and  
a page-grading engine associated with an approximation matrix  $Q'$ , where  $Q'$  approximates an ideal matrix  $Q$  with respect to the connectivity information (ranks are good approximation to the actual ranks; page ranks are calculated using  $N \times N$  link matrix) [matrix, Para 0005, 0007];

wherein the page-grading engine receives as input a personalization description  $v$  describing a set of preferences among the web pages, and grades search results with respect to  $Q'$  and  $v$  (customized (or personalized) link matrix  $B'$ ) [ranking (page grading), Para 0026-0027].

Claim 4.

Kamvar discloses:

A method of grading objects from an interconnected collection of weighted

objects, the weights of the objects described by a description v, and the interconnection of the objects described by a description P, the method comprising [Fig 6 Para 20];

applying a grading function Q' to the description v for the objects to determine a set of grades for the objects (determination of ranks (grading function)) [Para 0018, 0021]; and

assigning at least one object the corresponding determined grade for that object [node ranking, Para 0018];

wherein the grading function Q' approximates an ideal grading function Q, where applying ideal grading function Q to the description v produces ideal grades with respect to description P for every object in the interconnected collection of weighted objects (customized (or personalized) link matrix B') [ranking (page grading), Para 0026-0027].

Claim 13.

Kamvar discloses:

A system for grading objects from an interconnected collection of weighted objects comprising:

a description v of the weights of the objects [personalization weights v, See Kamvar Para 0026];

a description P of the interconnection of the objects (links between elements) [link matrix (interconnection), See Kamvar Para 0026]; and

an object-grading engine for approximating an ideal grading function Q with an approximate function Q', where applying ideal grading function Q to the description v produces ideal grades with respect to description P for every object in the interconnected collection of weighted objects, and for assigning at least one object the grade produced for that object by an application of Q' to v (customized (or personalized) link matrix B') [ranking (page grading), Para 0026-0027].

Claim 14.

Kamvar discloses the elements of claim 13 as above and furthermore it discloses a search engine in connection with the object-grading engine, wherein the object grading engine grades objects passed from the search engine (rank (grade), search results) [Kamvar Para 0031].

Claim 15.

Kamvar discloses the elements of claim 13 as above and furthermore it discloses wherein the objects are web pages [Kamvar Para 0007].

Claim 16.

Kamvar discloses:

A computer-readable medium including computer-executable instructions

facilitating the grading of web pages, the web pages interconnected corresponding to a matrix P, computer-executable instructions executing the steps of [Para 0026-0027]:

computing a representation of an approximation, matrix Q' to an ideal matrix Q (customized (or personalized) link matrix B' from Matrix B) [ranking (page grading),

Para [0026]-[0027]; and

applying Q' to a personalization vector v to obtain grades of the web pages (customized (or personalized) link matrix B' from Matrix B; personalization weights v) [ranking (page grading), Para 0026-0027].

#### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kamvar as applied to claims above, and in view of Achlioptas ("Fast Computation of Low Rank Approximations", hereinafter "Achlioptas").

#### **Claim 5.**

Kamvar discloses the elements of claim 4 as above but does not explicitly indicate "low-rank optimal approximation" [see Achlioptas section 1.1 and 3].

It would have been obvious to one of ordinary skill in the art to have combined

the cited references because "low-rank optimal approximation" as disclosed by Achlioptas would have enabled Kamvar to capture the degree of freedom of its entries thus retaining only the most pertinent characteristics of the data [See Achlioptas section 1.1].

6. Claims 6-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kamvar and Achlioptas as applied to claims above, and further in view of Page (US 6,285,999), hereinafter "Page".

Claim 6.

The combination of Kamvar and Achlioptas discloses the elements of claim 5 as above but does not explicitly indicate the element of claim 6. Page discloses the claimed element wherein entry  $P[i,j]$  in matrix P represents the probability of reaching one object i from another object j in one step of a random walk among the weighted objects [random jump, probability, See Page Col 5 lines 25-30, Col 6 lines 15-20, 40-43 and Fig 2-3].

It would have obvious to one of ordinary skill in the art to have combined the cited reference because probability of reaching one object from another object in one step of a random walk (random walk) would have enabled Kamvar to limit the extent to which a document's rank can be inherited by children documents.

Furthermore it helps to model the typical jumping of users to a different place in the web after following a few links [Page Col 6 lines 50-60].

Claim 7.

The combination of Kamvar, Achlioptas and Page discloses the elements of claim 6 as above and furthermore Page discloses wherein at each step of the random walk there is a fixed probability  $c$  that the walk will reset, and that the random walk then continues from object  $a$  with probability  $v[a]$  [random jump, probability, See Page Col 5 lines 25-30, Col 6 lines 15-20, 40-43 Fig 2-3].

Claim 8.

The combination of Kamvar, Achlioptas and Page discloses the elements of claim 7 as above and furthermore Page discloses wherein the ideal grade of an object  $b$  is the probability of arriving at object  $b$  at a step of the random walk [random jump, probability, See Page Col 5 lines 25-30, Col 6 lines 15-20, 40-43 Fig 2-3].

Claim 9.

The combination of Kamvar, Achlioptas and Page discloses the elements of claim 5 as above and furthermore Page discloses wherein the objects are web pages [Web, See Page Col 6 lines 50-60].

***Response to Arguments***

7. Applicant's arguments filed October 13, 2006 have been fully considered but they are not persuasive. The examiner respectfully traverses applicant's arguments.

Claim Rejections - 35 U.S.C. §101

Regarding claims 1-3, and 13-15, applicants argued that these claims are directed to a tangible embodied. However, as described in the specification, each of the component of the system are software module. The claims therefore lack the necessary physical articles or objects to constitute a machine or a manufacture within the meaning of 35 USC 101. They are clearly not a series of steps or acts to be a process nor are they a combination of chemical compounds to be a composition of matter. As such, they fail to fall within a statutory category. They are, at best, functional descriptive material *per se*.

Regarding claims 4-12 and 16-19, applicants argued that these claims provide a useful, concrete, tangible result having a practical application. However, the steps of these claims, at most, only calculate a number to be assigned to at least one object, and therefore does not provide any useful, concrete or tangible result.

Claim Rejections - 35 U.S.C. §102

Regarding claims 1, 4, and 13-16, applicants argued that Kamvar does not teach or suggest “a page-grading engine associated with an approximation matrix Q’, where Q’ approximate an ideal matrix Q with respect to the connectivity information”. On the contrary, Kamvar teaches a method for ranking webpage ([0005]) using an NxN link matrix A, which is mapped to the claimed element “ideal matrix Q with respect to the connectivity information”. Kamvar also teaches: “the block-diagonal structure of the link matrix means that, to a good **approximation**, the blocks may be decoupled from each

other and can be treated independently as **localized link matrices**", which are mapped to the claimed element "approximation matrix Q' ." Similar to the claimed limitations, Kamvar teaches that "A global rank may be calculated for a node by combining its local rank with the block rank of the block containing it. These **global rank are good approximations to the actual rank**" at [0005].

Applicants further argued that Kamvar does not disclose or suggest "a personalization description v describing a set of preferences among the web pages" or "search results with respect to Q' and v". On the contrary, Kamvar teaches at [0026] that "The link matrix weights may also depend on **personalization weights**, resulting in block ranks that are customized to an individual. For example, **K personalization weights**  $v_1, \dots v_k$  may be used to derive a customized link matrix  $B'$  from the generic **link matrix B...**" and "by selecting the K weights to reflect levels of **personal interest** in subject associated with the **K blocks**, the resulting block **link matrix** will be altered so that the transition more accurately reflect **personal preferences**".

8. Applicant's arguments, with respect to the 35 U.S.C 112 have been fully considered and are persuasive. The rejection of claims 2-3, 10-12, 17-19 have been withdrawn. In view of applicant's argument, the meaning of the terms  $V_k$ ,  $S$ , and  $U_k^T$  are interpreted in light of specification at paragraphs [0005]-[0009] and [0043]-[0048].

### ***Conclusion***

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

Art. Unit: 2166

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Khanh B. Pham whose telephone number is (571) 272-4116. The examiner can normally be reached on Monday through Friday 7:30am to 4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hosain Alam can be reached on (571) 272-3978. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2166

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Khanh B. Pham  
Primary Examiner  
Art Unit 2166

January 17, 2007

